

good of the greatest number, and who has used his years of tutelage so as to best fit himself for that great task. We speak of England as a "self-governing" nation; therefore, each Englishman must learn how to use "his moral force of character." First, to govern himself, and then to improve the conditions of the life of his fellow creatures. These sixty men, chosen to carry out this great scheme, might be the little leaven which would leaven the whole lump of Oxford, and raise up an ideal to many of their contemporaries. It is a great boon to the English-speaking race that a great man should so publicly insist upon character as of equal value with attainments and sportsmanship. It was by force of character that Mr. Rhodes led, whether we applaud the ultimate goal at which he aimed, or deplore the means. Let us hope and intend that force of character shall be the distinguishing feature, not only of those chosen to benefit by his great bequest, but of all who are being trained, that their education may be to them an atmosphere, a discipline, and an introduction to largeness of life.

R. A. P.

## A FEW HINTS ON MOTH REARING.

Entomology is one of the most fascinating and interesting pursuits I know, and if people only realised the fact that many spare moments might be occupied in watching the habits of insects to their ultimate intense delight and lasting interest, I believe many more would take up this most wonderful and marvellous study of insect life.

Of course you all know that butterflies and moths lay eggs, and it is quite within anyone's power to obtain some of these, which will hatch out into minute caterpillars, and ultimately, when full grown and full fed, will change into chrysalises, finally emerging after some months into the perfect insect.

Last summer, I was spending part of my holidays in the

New Forest, which district affords abundant scope for the pursuit of entomology.

There were a quantity of white poplars (*populus alba*) in my brother's garden, and knowing these trees to be the habitat of many larvæ, I proceeded to search for any likely specimens of interest. In a few minutes I came across a very smart fellow, with a green body and red head, which was reared up in an attitude of defiance, as much as to say, "Touch me if you dare." However, I dared, and promptly deposited him in my box, putting with him some tender leaves of the poplar which he loves so much.

This caterpillar, as I dare say some of you have already guessed, is the larva of the puss moth, of a very sombre grey when its perfect stage is reached.

Having discovered two of these caterpillars, I turned my attention to a different kind of tree, viz., the common willow. It was a roasting hot day, and only the keenest interest would have kept me searching for hours as I did that morning in the blazing sun, but my efforts were rewarded; after a little examination of the willows, I saw what was very like one of the leaves of the tree in colour, yet surely rather fatter and larger; "Yes, sure enough," here was a fine fellow indeed, about  $3\frac{1}{2}$  inches long with a horn on his tail, and several oblique, white stripes down his body, of a sea-green colour. He had eaten the branch whereon he was almost bare, and when you come across such a branch you may be fairly certain there is a caterpillar not far away.

Soon, I had found no less than four of these same larva, some small, and some larger, and consequently older than the others. All of them will become eyed-hawk moths, beautiful though not gaudy insects, with large eye-like spots on the hind wings.

While crossing a common a day or two after, in this same district, I saw a caterpillar hastening across my path; on picking it up, I found it to be of a beautiful green colour, covered with pink spots, round which were black velvety rings. This is the Emperor Moth, which when full-fed spins for itself a cocoon of silk, open at one end, then turns into a black chrysalis and goes to sleep for about eight or nine months, waking up as a lovely moth with brownish pink and orange colours, and an eye-like spot on each wing.

While staying in the New Forest I collected quite a family



of caterpillars, and they all in their turns spun webs or burrowed in the ground.

The puss caterpillars are very wonderful in their habits of changing, they gnaw the wood of the tree, and, mixing little bits with their own saliva, form a cocoon around them which resembles the wood itself, and go snugly to sleep inside, being safe from all intruders. I wish I could shew you my two specimens, which are side by side on the same piece of wood, looking like mere excrescences. I am now only waiting for them to become moths, as I have had them already nine months.

The other day, to my great delight, I found that a large specimen of the poplar hawk moth had come out of its pupa case; he is a lovely insect, of a brownish-grey hue, with brick-red markings on the under wings, just  $3\frac{1}{2}$  inches from wing to wing. Not long after he had emerged, I noticed in the breeding cage some little green balls sticking hard and fast on to the sides of the cage; these are eggs which the moth has laid, and I hope to succeed in hatching them and rearing other moths from them in the same way.

The privet hawk moth is also an interesting one of its kind, and easily obtainable. Look on some privet shrubs, and where the leaves are eaten you may expect to find the object of your search, which is also green, with purple oblique stripes and a horn on the tail. They burrow in the ground and become smooth dark-brown pupæ. I possess two just now in the pupa stage awaiting their change, which may take place any day.

There is a very common caterpillar one often comes across, familiarly called the woolly bear, but whose real name is the common tiger moth. This spring, I found several of these feeding on groundsel; having taken two and fed them for about a month, one of them spun a cocoon on the ceiling of the cage, and was about to turn chrysalis when he was attacked by his companion, and forced to vacate his beautiful hammock, while the lazy intruder proceeded to take up his abode inside the nest already prepared. If I could have foreseen events, I should have separated them, but now, it did not seem worth while interfering, as the poor exile was already beginning to construct another cocoon for himself, though it was natural he had not the wherewithal left to make a satisfactory new one, for he had lined his first one

on the outside with the long hairs from his own body. However, he succeeded in manufacturing another web, though it was a poor transparent thing, and now he has changed into a smooth black pupa, his old skin being pushed off in front of him. Meanwhile, the intruder, not finding his stolen dwelling quite to his fancy, crept out, and finally was obliged to make one of his own. Why he was unable to occupy it, I cannot tell.

In conclusion, I will give a few trees and plants on which you may be likely to find caterpillars or their eggs, in case any one of you cares to take up this most fascinating and engrossing hobby.

First of all, remember that, when once the caterpillar has changed into a chrysalis, the soil (which must always be provided in cases of burrowing specimens) must be sprinkled with water every week or so to keep it moist, otherwise the butterflies or moths will not emerge, or will come out sadly crippled.

Keep the food always fresh for the caterpillar, and provide a piece of common wood in case of puss moths.

List of trees, with grubs, which feed on them:—

#### APPLE TREE.

Wood leopard moth.	Common ermine.
Emperor moth.	Eyed-hawk moth.

#### ALDER.

Lime hawk moth.	Dagger moth.
Lobster moth	Canary shouldered
Alder moth.	thorn.

#### HAZEL.

Comma butterfly.	Large emerald moth.
Lobster moth.	Copper underwing.
Buff tip.	Wood leopard moth.

#### OAK.

Purple hair streak	Kitten moth.
butterfly	Gipsy moth.
Oak eggar.	Crimson underwing.
Buff tip.	Purple thorn.
Coxcomb prominent.	



## POPLAR.

Poplar hawk moth.  
Eyed hawk.  
Goat moth.

Puss moth.  
Figure of 8o moth.  
Herald moth.

## PRIVET.

Privet hawk moth.

Lilac beauty.

## WILLOW.

Poplar hawk.  
Eyed hawk.  
Puss moth.  
Early thorn.

Camberwell beauty  
butterfly.  
Emperor moth.

## RAGWORT.

Cinnabar moth.

## COMMON NETTLE.

Small tortoise shell  
butterfly.  
Peacock butterfly.

Red admiral  
butterfly.  
Ghost swift moth.

A breeding cage, price 2/6, may be obtained from Messrs. Watkins & Doncaster, 36, Strand, London.

Useful books on Entomology are the following:—

Natural History of Butterflies and Moths; by Edward Newman, 25/.

Our Country's Butterflies and Moths; W. J. Gordon, 6/-

Common British Moths; J. G. Wood, 3/6 coloured, plain 1/-

British Butterflies; W. S. Coleman, 3/6.

Practical Hints for the Field Lepidopterist. Just published. By J. W. Tutt, 5/6.

S. SMYTH.

## THE READING UNION.

One Post Card and the following letter are the only communications which reached the editor by the given date. Is comment needful? Attention is especially drawn to the suggestion that post cards on any helpful book of general interest may always be sent in. For the following term the especial books suggested are:—

"The Buried Temple," Maeterlinck. Published by G. Allen, 4/6.

"Pastor Agnorum" (see Parent's Review).

"The Heart of the Empire," (Social Essays).

"Caroline the Illustrious" (2 vols).

(Caroline of Anopach, Wife of George II.—a most interesting and enlightening book for the Georgian period.)

Renaissance Types (Lilly)—

A scholarly survey of the master minds of the Renaissance. A series of deeply appreciative studies of the men who helped to forward the process of re-awakening. We have brought before us a stirring spectacle of the widespread influence of good men—not only in their especial work, but in their daily lives. On the other hand, we see the bad effect of failure to live up to the ideal as depicted in the lives of Luther and his disciples. Truly here are five notable "footprints in the sands of time."

S. H.

Various books recommended:—

"Watts," C. T. Bateman. Bell's miniature series of Painters.

(Eight reproductions, admirable for picture talks.)

"The Lives of the Hunted," "Wild Animals I have known," E. Seton Thompson. Published by David Nutt, each 6/-.

(Wonderfully interesting and intimate studies of wild life.)

"A Guide to the Best Historical Novels and Tales," J. Field. Published by Elkin Mathuens.

(Short reviews of all extant historical novels arranged in the centuries of which they treat, and quite up-to-date.)